

A REVISION OF THE ANT TRIBE CARDIOCONDYLINI (HYMENOPTERA, FORMICIDAE)

I. The Genus *Prosopidris* Wheeler¹

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This is the first of a series of papers revising the tribe Cardiocondylini, a group of small myrmicine ants (up to 3.0 mm in length), characterized by the possession of a pedunculate petiole, a wide postpetiolar dorsum, propodeal spines, and a general lack of pilosity. The tribe currently embraces the genera *Cardiocondyla* Emery (virtually cosmopolitan, mainly Old World), *Xenometra* Emery (West Indian) and *Prosopidris* (Papuasian). *Xenometra* includes a single poorly known species which is apparently parasitic on *Cardiocondyla emeryi* (Emery, 1917). *Cardiocondyla* and *Prosopidris* are free living, and form small inconspicuous colonies usually in the soil or in rotting logs.

In this contribution Wheeler's subgenus *Cardiocondyla* (*Prosopidris*) is elevated to full generic status. The worker and female types of its single previously known species, *P. sina* Wheeler (Philippines), are redescribed and a second species, *P. papuana* (New Guinea), is newly described. The *papuana* material includes the first known male of the genus, along with females and workers. The male is highly ergatoid, like those of some *Cardiocondyla* species.

Measurements and Indices: In order to characterize properly cardiocondylinae ants the following measurements and indices (with their abbreviations) will be used in this and succeeding papers:

Head Length (HL) — Maximum length of head in frontal view from clypeal apex to posterior border of occiput.

Head Width (HW) — Width of head measured in frontal view immediately behind the eyes.

Scape Length (SL) — Maximum measurable length of scape, not including its articular condyle.

Weber's Length (WL) — Weber's length of mesosoma (=alitrunk), measured in lateral view along a line connecting the place where the pronotum joins the cervix and the apices of the

¹Research supported by U.S. National Science Foundation Grant No. GB1634.

the flanges of the sides of the propodeal declivity (Brown, 1953). The lateral viewing position of specimens must be standardized by lining up the tips of the propodeal spines.

Pronotum Width (PW) — Width of pronotum, measured in dorsal view, disregarding humeral angles.

Propodeal Spine L(ength) — Maximum measurable length of propodeal spine, in lateral view, from its apex to the far edge of the propodeal spiracle.

Petiole L(ength) — Length of petiole, measured in lateral view, from the apices of the flanges of the sides of the propodeal declivity to the dorsal posterior border of the petiolar tergite.

Petiole Height — Height of petiole, measured in lateral view, on a line perpendicular to the petiole length; from the dorsalmost point on the petiolar node to the ventral side.

Postpetiole W(idth) — Maximum width of postpetiolar dorsum.

Postpetiole L(ength) — Midline length of postpetiolar dorsum.

Cephalic Index (CI) — Head width expressed as a percentage of head length. $HW \times 100/HL$

Scape Index (SI) — $SL \times 100/HW$

Mesosomal Index — $PW \times 100/WL$

Propodeal Spine Index (SpI) — $Propodeal\ Spine\ L. \times 100/WL$

Petiolar Index — $Petiole\ L. \times 100/Petiole\ Height$

Postpetiolar Index — $Postpetiole\ L. \times 100/Postpetiole\ W.$

Genus *Prosopidris* Wheeler new status

Cardiocondyla subgenus (*Prosopidris*) Wheeler, 1935, *Psyche* 42: 40-41.

Type-species: *Cardiocondyla (Prosopidris) sima* Wheeler, Ibid: 42-43.

Wheeler's subgenus *Prosopidris* is here raised to full generic status. This change of rank is based on the distinctive clypeus, the 11-segmented antennae, and the high mesosoma, which readily distinguish *Prosopidris* from *Cardiocondyla*, though the two genera are obviously closely related.

Wheeler's (1935) subgeneric diagnosis requires some modification in light of the new species, *Prosopidris papuana*, described below. In the workers the mesometanotal impression is lacking or very feeble. In the female wing venation the stub of vein Rs, extending beyond the cubital cell, may or may not be present. The only known male of the genus is described below.

***Prosopidris papuana* new species**
(Figures 1-8)

WORKER

Measurements: Based on the holotype and 4 paratype workers (holotype cited first): HL 0.59 mm, 0.59-0.60 mm; HW 0.44 mm, 0.44 mm; CI 75, 73-75; SL 0.49 mm, 0.49-0.52 mm; SI 111, 111-118; PW 0.33 mm, 0.33 mm; WL 0.70 mm, 0.68-0.70 mm; Mesosomal Index 47, 47-48; Propodeal Spine L. 0.18 mm, 0.18-0.20 mm; SpI 26, 26-29; Petiole L. 0.28 mm, 0.28-0.29 mm; Petiole Height 0.17 mm, 0.17-0.18 mm; Petiolar Index 159, 155-164; Postpetiole W. 0.24 mm, 0.24 mm; Postpetiole L. 0.15 mm, 0.15-0.16 mm; Postpetiolar Index 60, 60-65. Palpal formula *Maxillary* 5: *Labial* 3 (paratype dissected).

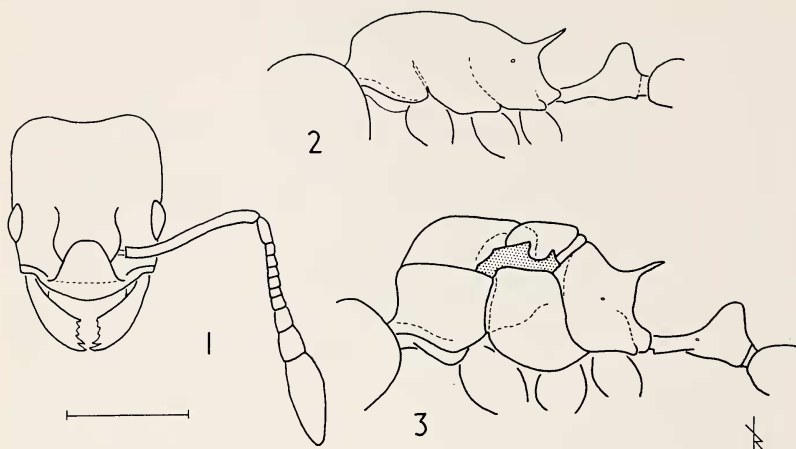
Description: General form is shown in Figures 1 and 2. Head subrectangular, sides sub-parallel, slightly convex; posterior corners rounded; occipital border slightly concave. Scape slightly curved distally, exceeding occipital border by a distance about equal to its maximum diameter. Antennae 11-segmented, with a 3-segmented club, the apical segment about 3 times as long as the preapical. Eyes strongly convex, maximum diameter (in all specimens) 0.13 mm; their anterior edges at a distance of $0.7 \times$ their diameter from the lateral genal border. Outer borders of mandibles convex; masticatory border with 5 teeth, the 2 apical enlarged. Clypeus produced anteriorly, forming a shelf over the mandibular bases and bulging outwards; anterior border convex, with thick lateral sections anterior to each antennal sulcus; posterior portion extending broadly between the frontal carinae.

Mesosomal profile as in Figure 2; lacking a promesonotal constriction, humeral angles indistinctly rounded. Mesometanotal impression weakly developed on mesosomal dorsum as a very shallow concavity, lacking an incised sutural trace. Propodeal spines moderately long, pointed, uncurved. Petiolar node from above, oval, distinctly wider than long. Postpetiole with convex anterior and posterior margins and convex sides. Dorsal width of first gastric segment $2.1 \times$ postpetiole width.

Head and mesosoma strongly reticulate-punctate and mat; petiole, postpetiole and gaster moderately reticulate and shining.

Yellow pilosity on clypeus, mandibles and posterior end of gaster. Yellowish adpressed pubescence dense on antennae, moderate on head, petiolar node, postpetiolar dorsum, and gaster.

Entire body yellow to dark yellow.



Figs. 1-3. *Prosopidris papuana* new species. Figs. 1 and 2, worker (Holotype). Fig. 1. Head, frontal view. Fig. 2. Mesosoma and petiole, lateral view. Fig. 3, female (Paratype); mesosoma and petiole, lateral view. Scale line: 0.40 mm.

Type locality: Bisianumu, near Sogeri, Papua, 15-20 March, 1955 (E. O. Wilson acc. 655).

FEMALE

Measurements: Based on 5 specimens collected with the workers: HL 0.60-0.62 mm; HW 0.46-0.47 mm; CI 76-78; SL 0.49-0.52 mm; SI 103-114; PW 0.46-0.47 mm; WL 0.83-0.85 mm; Mesosomal Index 54-57; Propodeal Spine L. 0.20-0.21 mm; SpI 23-25; Petiole L. 0.31-0.33 mm; Petiole Height 0.20-0.21 mm; Petiolar Index 146-167; Postpetiole W. 0.28-0.29 mm; Postpetiole L. 0.16 mm; Postpetiolar Index 56-59.

Description: General form of mesosoma as in Figure 3. Head, antennae, clypeus and mandibles similar to worker. Ocelli slightly elevated. Eyes strongly convex, maximum diameter (in all specimens) 0.16 mm; their anterior edges at a distance of $0.5 \times$ their diameter from the lateral genal border. Propodeal spines longer and thinner than worker. Petiolar node and postpetiolar dorsum as in worker. Dorsal width of first gastric segment $2.2-2.4 \times$ postpetiole width.

Head and mesosoma strongly and coarsely reticulate-punctate and moderately shining; petiole, postpetiole and gaster moderately reticulate and shining.

Yellow pilosity as in worker. Yellowish adpressed pubescence dense

on antennae, postpetiolar dorsum and gaster, and moderate on head and mesosoma.

Color as in worker, pterostigma pale brown, wing veins pale yellow; apical stub of wing vein Rs absent beyond cubital cell.

MALE

Measurements: Based on a single specimen collected with the workers: HL 0.59 mm; HW 0.47 mm; CI 81; SL 0.44 mm; SI 93; PW 0.36 mm; WL 0.75 mm; Mesosomal Index 48; Propodeal Spine L. 0.15 mm; SpI 20; Petiole L. 0.34 mm; Petiole Height 0.21 mm; Petiolar Index 162; Postpetiole W. 0.29 mm; Postpetiole L. 0.15 mm; Postpetiolar Index 52.

Description: Ergatoid. General form as shown in Figures 4 and 5.

Head with sides slightly divergent behind eyes, then strongly converging; posterior corners rounded; occipital border slightly concave. Scapes straight, their apices falling slightly short of the occipital border. Antennae 12-segmented. Funiculus and clypeus as in worker. Eyes strongly convex, maximum diameter 0.13 mm; their anterior edges at a distance of $0.7 \times$ their diameter from the lateral genal border. Mandibles narrowly falcate, ending in a point. Frontal carinae more extensive than in the worker.

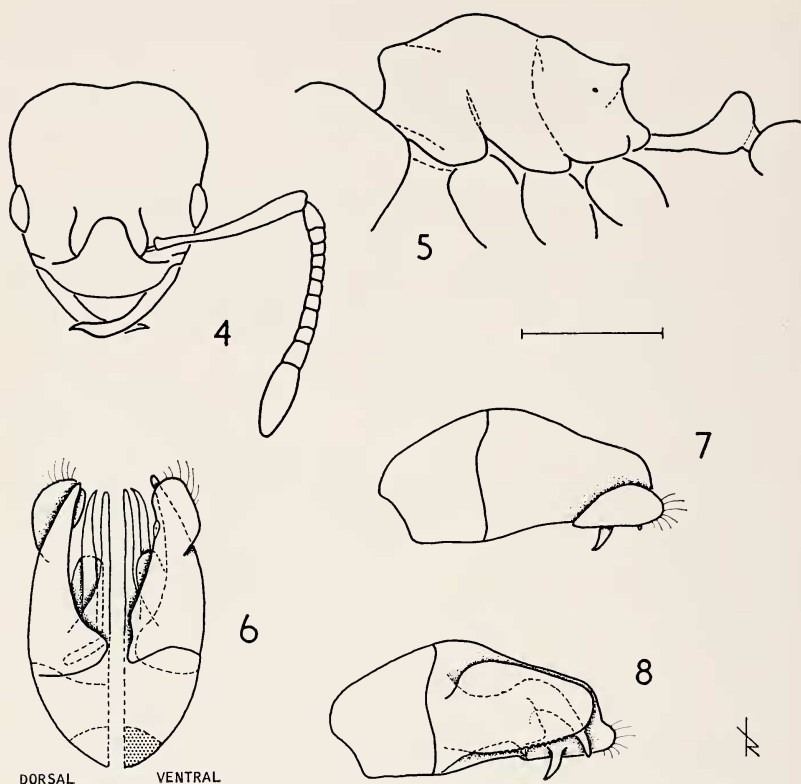
Mesosoma high, in lateral view, with no promesonotal constriction, but with distinctly rounded humeral angles; mesometanotal impression and constriction clearly developed, but lacking an incised suture. Propodeal spines blunt; shorter and wider at base than in worker. Petiolar node and postpetiole dorsally, as in worker. Dorsal width of first gastric segment $2.0 \times$ postpetiole width.

Pro- and mesonotum strongly reticulate-punctate; rest of mesosoma, head, petiole, postpetiole and gaster moderately reticulate. Whole ant very shining.

Yellowish pilosity on clypeus and posterior end of gaster. Yellowish adpressed pubescence very dense on antennae, pronotum, mesonotum, gaster, and dorsa of petiole and postpetiole.

Entire body yellow.

Genitalia: General form shown in Figures 6, 7, and 8. Basal ring entire; the genital foramen inclined ventrally. Gonoforceps each with a lobate, hirsute ventrolateral subapical extension; a peculiar large ventrally directed curved tooth arising on the ventral part of the inner face (Figure 8). Volsella hook shaped, its apex directed ventrally, the base swollen with a small acute ventrally directed tooth (Figure 8). Penis valves rounded apically, each with a row of fine teeth on its ventral edge.



Figs. 4-8. *Prosopidris papuana* new species. Figs. 4-8, male (Paratype). Fig. 4. Head, frontal view. Fig. 5. Mesosoma and petiole, lateral view. Fig. 6. Genitalia, dorsal and ventral views. Fig. 7. Genitalia, left half, external lateral view, showing gonoforceps and basal ring. Fig. 8. Genitalia, right half, internal lateral view, showing penis valve, volsella, gonoforceps and basal ring. Scale line: 0.40 mm., for Figs. 4 and 5; 0.15 mm., for Figs. 6, 7 and 8.

Type deposition: The holotype and most paratypes are deposited in the Museum of Comparative Zoology at Harvard College, Cambridge, Massachusetts (Type No. 31156), single worker and female paratypes in the Australian National Insect Collection, CSIRO, Canberra.

Prosopidris sima Wheeler

Cardiocondyla (Prosopidris) sima Wheeler, 1935, *Psyche* 42: 40-43, figs.

The worker and female are adequately described (with figures of the worker) in Wheeler's paper. The measurements and indices applied above to *Prosopidris papuana* have also been applied to *P. sima* and are listed here:

WORKER

Based on 5 workers from Wheeler's syntype series (MCZ Type No. 20798), the lectotype (by present designation, so labelled) cited first, the others paralectotypes: HL 0.57 mm, 0.55-0.57 mm; HW 0.46 mm, 0.44-0.46 mm; CI 80, 79-80; SL 0.51 mm, 0.47-0.52 mm; SI 111, 107-114; PW 0.34 mm, 0.33-0.34 mm; WL 0.68 mm, 0.67-0.68 mm; Mesosomal Index 50, 48-50; Propodeal Spine L. 0.20 mm, 0.18-0.20 mm; SpI 29, 26-29; Petiole L. 0.28 mm, 0.26-0.29 mm; Petiole Height 0.20 mm, 0.19-0.20 mm; Petiolar Index 141, 133-154; Postpetiole W. 0.23 mm, 0.23-0.24 mm; Postpetiole L. 0.16 mm, 0.15-0.16 mm; Postpetiolar Index 69, 64-71. Dorsal width of first gastric segment 2.1-2.3 \times as wide as postpetiole.

FEMALE

Based on three paralectotypes: HL 0.59 mm; HW 0.46-0.47 mm; CI 78-81; SL 0.49-0.51 mm; SI 104-111; PW 0.46-0.47 mm; WL 0.80 mm; Mesosomal Index 57-59; Propodeal Spine L. 0.21-0.22 mm; SpI 27; Petiole L. 0.31-0.33 mm; Petiole Height 0.20-0.21 mm; Petiolar Index 148-167; Postpetiole W. 0.25-0.26 mm; Postpetiole L. 0.16 mm; Postpetiolar Index 63-65. Dorsal width of first gastric segment 2.3-2.4 \times as wide as postpetiole.

Type Locality: Dansalan, on Lanao Island, Philippine Islands.

The following chart presents the major distinguishing characteristics of the two *Prosopidris* species considered above:

Prosopidris sima Wheeler*Prosopidris papuana* n.sp.

Worker

Anterior clypeal border straight.	Anterior clypeal border evenly convex.
Mesosoma almost smooth, shining.	Mesosoma mat, highly reticulate-punctate.
Yellow-brown.	Yellow to dark yellow.

Female

Anterior clypeal border flattened.	Anterior clypeal border evenly convex.
Propodeal spines thicker than in worker.	Propodeal spines thinner than in worker.
Pronotum shining, almost smooth.	Pronotum highly reticulate-punctate.
Pronounced lateral propodeal striae converging on propodeal spine.	No clear propodeal striae.
Stub of vein Rs extending beyond the cubital cell.	Stub of vein Rs beyond cubital cell lacking.

The author wishes to thank Dr. Robert W. Taylor of Harvard University for his invaluable assistance.

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